To: Wagner, Lydia (ECY)[LBLA461@ECY.WA.GOV]
From: Wagner, Lydia (ECY)
Sent: Tue 1/20/2015 6:01:15 PM
Subject: New QAPP: Salish Sea Dissolved Oxygen Modeling Approach: Sediment-Water Interactions

FYI – I'm forwarding this information to the Deschutes TMDL Distribution List.

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http://www.ecy.wa.gov/programs/wq/wqhome.html

New ***Quality Assurance Project Plan: Salish Sea Dissolved Oxygen Modeling Approach: Sediment-Water Interactions*** is now at https://fortress.wa.gov/ecy/publications/SummaryPages/1503103.html.

Low concentrations of dissolved oxygen have been measured throughout the Salish Sea. Recent modeling investigations indicate that low concentrations occur throughout much of the Salish Sea due to the Pacific Ocean and natural conditions. However, some regions of South and Central Puget Sound are also influenced by human nutrient contributions. Sediment-water interactions strongly influence oxygen levels. The previous modeling studies externally specify the sediment-water exchanges and adjustments to account for changes in external loading. That approach cannot distinguish the loading and sediment effects of individual sources.

The purpose of this model development is to add the capability to dynamically simulate the sediment-water exchanges in a process called sediment diagenesis. Material fluxes to the sediment from the water column fuel biogeochemical processes that release some of the nutrients back to the water column and consume oxygen in the process. We will set up and test the model code to ensure that sediment-water exchanges are incorporated appropriately.

We will apply the revised model to the Salish Sea and compare against monitoring data to assess the model skill. If needed, we will recalibrate the dissolved oxygen model. The revised model will be used to reevaluate scenarios to identify the relative influences of climate effects, local human nutrient sources, and the Pacific Ocean on dissolved oxygen. Results also will be used to develop new boundary conditions for the South and Central Puget Sound model.

If you have questions, please contact Mindy Roberts at 360-407-6804 or at mrob461@ecy.wa.gov.